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Case Report

A Case of Surgery for Kyphosis of the Thoracolumbar Spine in an Elderly Patient with Dysphagia

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Here we report a case of surgery for kyphosis of the thoracolumbar spine in an elderly patient, in whom surgery was performed because the patient had developed intractable digestive symptoms. The case was that of a 76–year-old female with complaints of back pain and dysphagia. When videofluoroscopic examination (VF) of swallowing was performed in the cardia of the stomach, images that indicated stagnation and the reflux of food were observed. It was easier for the patient to swallow food in the extension position. We performed corrective fusion of the posterior spine. After the surgery, the kyphosis angle was improved to 27°, the patient's back pain was alleviated, and it became easier for the patient to swallow food. VF also showed that the patient's difficulties with the passage of food had improved. We believe that surgery is a good treatment option for cases of kyphosis with digestive symptoms and deteriorating activities of daily living (ADL), even in the absence of pain and paralysis. VF is also useful for performing evaluations before and after surgery.

Key words: kyphosis, dysphagia, videofluoroscopic examination of swallowing (VF), fusion

With the current aging of society, the number of patients with vertebral body fractures due to osteoporosis is increasing, and delayed disorders such as protracted pain and the development of nerve disorders, which are difficult to treat, can occur. In some cases, a patient develops pseudoarthrosis and kyphosis deformation and thus becomes a candidate for surgery, but many of these cases involve spinal paralysis. However, kyphosis of the thoracolumbar spine in elderly persons causes not only pain but also various disorders such as movement disorders, respiratory disorders, digestive disorders, and mental disorders, including depression [1–4]. Digestive disorders include gastro esophageal reflex disease (GERD) and dysphagia. Goyel *et al.* reported that dysphagia associated with kyphosis is a rare presentation, and found that kyphosis and scoliosis promote reflux because of pressure on the stomach [5]. However, there have been no reports of cases in which surgery was performed for dysphagia caused by esophageal closure due to severe kyphosis of the thoracolumbar spine. In our case, it became easier for the patient to swallow food in the extension position. For this reason, we performed surgery. We here present our case report of the use of surgery to treat kyphosis of the thoracolumbar spine in an elderly patient in whom surgery was performed because she had developed intractable digestive symptoms.

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Case Report

The case was that of a 76-year-old female with complaints of back pain and dysphagia. She fell down a flight of stairs and suffered compression fractures in the 11th and 12th thoracic vertebrae. She experienced persistent back pain, and she developed symptoms such as difficulty in swallowing food, and was thus admitted to our hospital for surgery about 5 months after the injury. Upon admission, a plain X-ray revealed that the 11th and 12th thoracic vertebrae had wedge-shaped deformations, and the kyphosis angle was 44.2°. There was no paralysis in the lower limbs, and the patient could walk, but she presented with back pain and with difficulty in swallowing food unless the body trunk was dorsiflexed. In magnetic resonance imaging (MRI) and computed tomography (CT) examinations that were conducted following a myelogram, no findings were made that would indicate spinal compression (Fig. 1).

We performed a swallowing evaluation with the cooperation of the Okayama University Dental School. When videofluoroscopic examination (VF) of swallowing was performed, we found no abnormality in the oral or pharyngeal stages, but in the cardia of the stomach, images that indicated stagnation and the reflux of food were observed. We had the patient change position to the modified extension position, and the flow of food was smooth. We concluded that these digestive symptoms were caused by the kyphosis and thus performed corrective fusion of the posterior spine. After the surgery, the kyphosis angle was improved to 27° (Fig. 2), the patient's back pain was alleviated, and it became easier for her to swallow food. VF also showed the patient's difficulties with the passage of food to have improved (Figs. 3, 4).

Discussion

Kyphosis due to spinal caries was common in the past, but in today's aging society, cases of degenerative kyphosis of the thoracolumbar spine and kyphosis

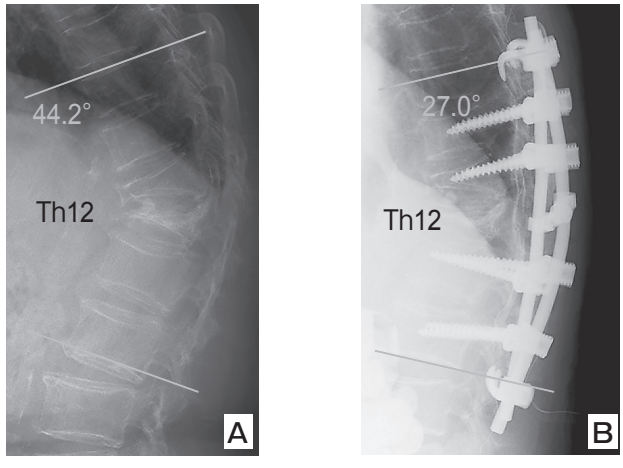

Fig. 2 A, preoperative X-ray; B, postoperative X-ray. After the surgery, the kyphosis angle was improved to 27°.

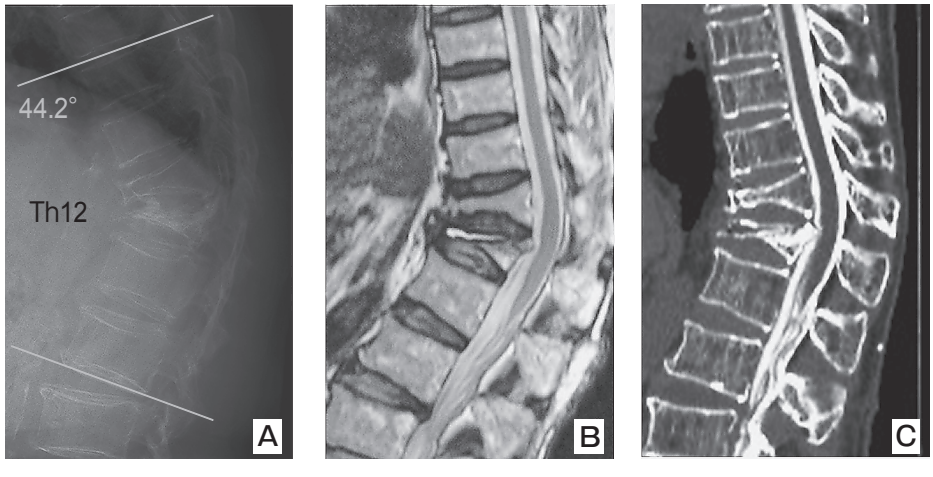

Fig. 1 A, preoperative X-ray; B, preoperative MRI; C, preoperative CT. A plain X-ray revealed that the 11th and 12th thoracic vertebrae had wedge-shaped deformations, and the kyphosis angle was 44.2°.

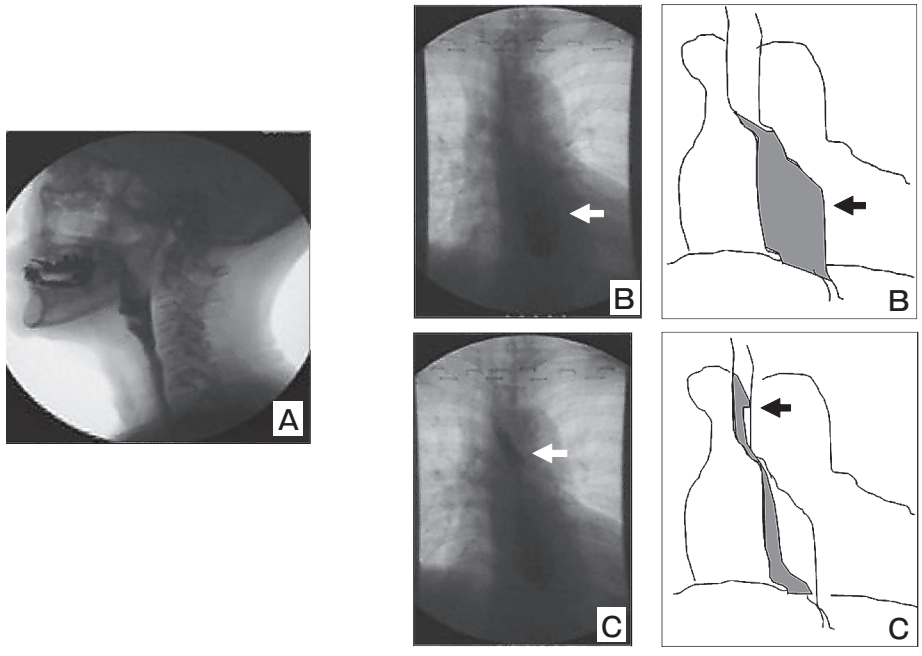

Fig. 3 Videofluoroscopic examination (VF) of swallowing was performed. **A**, preoperative VF: We found no abnormality in the oral or pharyngeal stages; **B**, preoperative VF. An arrow (→) shows a pool of contrast medium in the cardia of the stomach; **C**, preoperative VF. An arrow (→) shows the countercurrent of the contrast media.

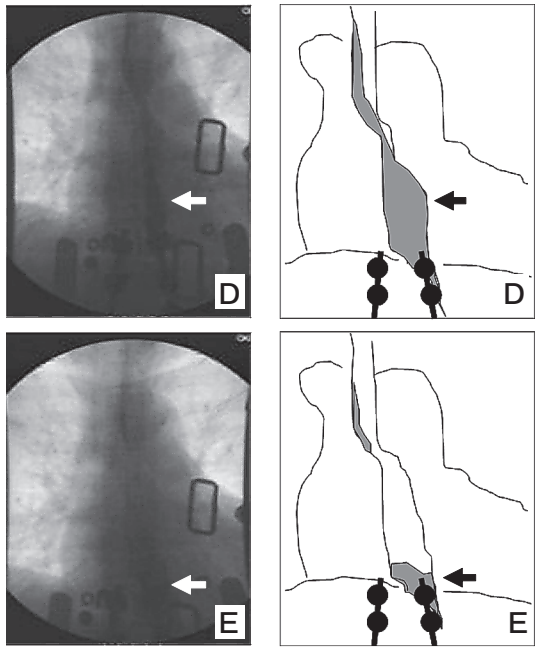

Fig. 4 **D**, postoperative VF. An arrow (→) shows the contrast media passing by smoothly; **E**, postoperative VF. An arrow (→) shows that the difficulties in the passage of the contrast media had improved.

following compression fractures resulting from osteoporosis have been increasing in number. The symptoms of kyphosis include digestive symptoms such as bloating and reflux esophagitis in addition to cosmetic problems, lumbar backache, spinal paralysis, and other symptoms [1–4]. Miyakoshi reported that increases in the angle of lumbar kyphosis and in the number of lumbar vertebral fractures may represent very important risk factors for GERD in osteoparotic patients [6]. Goyel *et al.* reported that dysphagia associated with kyphosis is a rare presentation, and found that kyphosis and scoliosis promote reflux because of pressure on the stomach [5]. A case of compression of the esophagus between the spine and aorta has been reported as a consequence of untreated scoliosis [7].

There are various reports regarding the applicability of surgery for treating kyphosis [8–10], but it is believed that cases with advanced pain and spinal paralysis, cases with difficulty in upright walking, cases with advanced deformation, and cases in which the future progression of kyphosis is predicted in children are candidates for surgery. In the present case, the patient had no spinal paralysis, but had

advanced pain and had developed intractable digestive symptoms, resulting in significant negative effects on her activities of daily living (ADL). Mummaneni [11] has suggested that cases with kyphosis of the cervicothoracic spine that develop dysphagia are candidates for surgery, but in our thorough research we found no reports in which surgery had been performed for digestive symptoms caused by kyphosis of the thoracolumbar spine as in this case.

In addition to kyphosis, other causes of digestive symptoms include cerebrovascular disorders, tumors of the upper gastrointestinal tract, esophageal hiatal hernia, and others. In addition, multiple causes may be involved simultaneously, so it is necessary to differentiate each cause. The methods of differentiation include interviews regarding subjective symptoms, fluoroscopy, endoscopy, videoendoscopy, and VF; the latter was utilized in this case. We believe that VF is useful for evaluations before and after surgery because it can be used to observe the flow of food in the oral stage, pharyngeal stage, and esophageal stage under fluoroscopic control, and can also be used to provide evaluations over time. However, there are currently no methods for evaluating digestive symptoms in cases of kyphosis.

In addition, for elderly patients, the application of surgery and surgical procedures should be selected carefully according to the patient's individual symptoms, observations of the patient's overall condition, the degree of kyphosis, and the ADL level. However, we believe that surgery for the correction of kyphosis is a good treatment option for cases of primary curvature deformation with digestive symptoms and deteriorating ADL, even in the absence of pain and paralysis.

Conclusion. We herein reported the use of surgery as a treatment for kyphosis of the thoracolumbar spine in an elderly patient in whom the surgery was performed because she had developed intractable digestive symptoms.

After the surgery, improvements were observed in both the subjective symptoms and the VF findings.

We believe that surgery for the correction of kyphosis is a good treatment option in cases of primary curvature deformation with digestive symptoms and deteriorating ADL, even in the absence of pain and paralysis.

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